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**Subject:** Modeling Status Summary

## **Now with HST Model Status**

### **HST Model**

- Broad agreement between model and data in LPR
- Model performance evaluated over a range of flow conditions and metrics
  - 1 in 100 year event, low flow periods
  - Suspended sediment concentrations, fluxes, bathymetric changes
- Model reproduces major processes identified in the data
  - Intra- and inter-tidal variability
  - Tidal pumping
  - Exchange with Newark Bay
  - Scour associated with episodic storm events
  - Infilling
- Ongoing tasks
  - Grain size distribution associated with inflowing solids at Dundee Dam and tributaries
  - Newark Bay system understanding and model application/refinement
  - Combined calibration with the contaminant fate and transport model

### **CFT Model**

- Detailed model diagnostics have been completed and a calibration strategy has been selected
  - Constrain the model by simultaneously calibrating to the CWCM data (2011/2012) and by depositional-regime-specific bed trends (1995-2010)
- Preliminary calibration of 2,3,7,8-TCDD is ongoing
- Ongoing areas of development include:
  - Incorporation of a fluff layer within the CFT model, to yield more realistic sediment-water interactions and surface layer dynamics.
  - Implementation of a spatially variable mixing scheme, to allow calibration by depositional regime.
  - Exploration of approaches to limit contaminant loss from surface sediments due to artificial contaminant mass transfer within the water column between rapidly and slowly settling particles, i.e., mimicking the effects of rate-limited desorption.
- Organic Carbon simplification code has been completed by CPG and approved by EPA, and will be phased into the CFT model development once the above issues are further along.

- In the meantime, a less complex treatment of organic carbon is employed, whereby constant carbon content is assigned to cohesive particles in the bed and the water column.

### **Bioaccumulation Modeling**

- Completing CFT-bioaccumulation model interface
- Atlantic menhaden, channel catfish, largemouth bass added to the food web model
- Model extension to Dundee Dam complete
- Preliminary calibration of 2,3,7,8-TCDD pending (contingent on CFT calibration)